REMARKS

In the original application, claims 1-24 were originally presented. Claims 25-27 were previously added. Claims 3 and 13 were previously canceled. Claim 17 is canceled by this amendment. Claims 1, 11, 15, 20-24, and 26 are currently amended in the application. Claims 1-2, 4-12, 14-16, and 18 -27 are currently pending in the application.

In the current Office action, claims 1-2, 4-12, and 14-27 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Gibbons et al. (US 5032009) in view of Gibbons et al. (US 6407789). Applicants respectfully traverse the foregoing rejection in view of the above amended and pending claims and for reasons set forth hereafter.

Independent claim 1 now recites a method for forming a liquid crystal alignment layer comprising forming a liquid crystal film on a substrate, the film consisting of liquid crystals and having a thickness. As stated in claim 2, the film may be formed by spin coating, with the liquid medium coated to a desired thickness on the substrate. Irradiating the liquid crystal film then serves to form this film into an alignment layer which is distinct from that taught by Gibbons.

It is respectfully submitted that neither Gibbons et al. (US 5032009) nor Gibbons et al. (US 6407789), nor the combination thereof, teach or suggest the claimed invention. Gibbons et al. (US 5032009) describes essentially two general alignment procedures (see Abstract, Claims, and Examples 1-21). In a first alignment procedure, liquid crystal (pure or dyed) is filled in the cell and, after the cell is filled, the filled cell is irradiated with linearly polarized light. In a second alignment procedure, a dye or dyed polymer film is coated on the substrates and subsequently irradiated with polarized light. Then, using the substrates, a cell is assembled and is liquid crystal filled. Gibbons et al. (US 5032009) describes three cases wherein the first two cases correspond to the first alignment procedure and the third case corresponds to the second alignment procedure. The first case is where a liquid crystal cell is filled with dyed liquid crystal and then irradiated to be aligned. The second case is where a liquid crystal cell is filled with pure liquid crystal and then irradiated to be aligned. The third case is where a dye or dyed polymer is coated on the substrates and irradiated to be used as alignment layers. Reference is

made to Col. 5, lines 44-49, wherein it is clearly indicated that absorption by dyes coated on the layer adjacent the liquid crystal, or dyes forming a part of an organic material (polyimide) coated on the layer adjacent the liquid crystal, are utilized.

The claimed invention forms an alignment layer using only liquid crystals in the formed film on a substrate. This thin film is then irradiated, such that only the thin liquid crystal layer is exposed to the irradiating light. In Gibbons, the entire cell of liquid crystal is exposed to the irradiating light, which will result in photo-destruction of the liquid crystal material to some degree. Further, forming a film of liquid crystal allows a predetermined thickness layer to subsequently allow precise alignment and varying alignment configurations to be easily formed. Also, in the claimed invention, dyes or dyed polymer films are not used for liquid crystal alignment, which is done in the third case of Gibbons et al. (US 5032009) described above (i.e., the second alignment procedure). Instead, in the claimed invention, the alignment layer is formed from liquid crystals that are in liquid crystal phase (i.e., are in liquid state, not crystalline or glassy state) at room temperature. Dyes and/or dyed polymer materials are not used in the claimed invention, and Gibbons et al. (US 5032009) does not teach using liquid crystals to form a film which serves as an alignment layer.

In view of at least the foregoing, it is respectfully submitted that claim 1 defines allowable subject matter. Since claims 2, 4-10, and 25-26 are dependent from claim 1, it is respectfully submitted that claims 2, 4-10, and 25-26 define allowable subject matter as well. Further, these dependent claims recite further features of the invention which are clearly not shown or made obvious by the Gibbons prior art. Nothing in Gibbons relates to forming a liquid crystal film by spin or dip coating as set forth in claim 2, and such a step would not have been performed in the embodiments of Gibbons, as no liquid crystal layer is suggested thereby. Forming a film in this manner from a liquid medium provides a precise thickness which avoids the formation of liquid crystal drops and deterioration of the material. Nothing in Gibbons relates to forming a liquid crystal film of a thickness as defined in claims 4 and 5. Other distinguishing characteristics are also set forth.

Independent claim 11 now recites a method of forming a liquid crystal cell by providing two opposed substrates, each with an electrode, and forming a liquid crystal film on at least one of the substrates consisting a liquid crystals and having a predetermined thickness to form an

alignment layer. Similarly to claim 1, this claim clearly distinguishes the prior art of Gibbons.

It is respectfully submitted that neither Gibbons et al. (US 5032009) nor Gibbons et al. (US 6407789), nor the combination thereof, teach or suggest the claimed invention. Firstly, in the claimed invention, irradiation is not done after filling a cell with liquid crystal, which is done in the first two cases of Gibbons et al. (US 5032009) described above (i.e., the first alignment procedure). Further, as set forth above, Gibbons et al. (US 5032009) describes two alignment procedures which are distinct from the present invention. Thus, as described with reference to claim 1, the use of a liquid crystal film to serve as an alignment layer is not taught nor made obvious by the Gibbons prior art. Forming the alignment layer as a liquid crystal film avoids possible contamination by the diffusion of materials from alignment layers made of other materials, such as the dichroic dyes and polyimide materials taught by Gibbons. Other claims also clearly distinguish the invention relative to Gibbons, such as the use of first and second liquid crystals in the formation of the cell, with the liquid crystals having the same molecular structure. This improves purity of the liquid crystal material in the cell. The prior art of Gibbons uses an alignment layer of a dye or a polyimide having a dye added thereto.. Other claims define aspects of the invention as described above which are not taught or made obvious by the prior art.

In view of at least the foregoing, it is respectfully submitted that claim 11 and those claims dependent thereon define allowable subject matter.

Similarly to claim 11, claim 24 recites a liquid crystal display comprising a first and second cell wall structure, electrodes disposed on facing sides of the first and second cell wall structures, an alignment layer disposed on at least one of the electrodes, and first liquid crystals disposed within a space between the first and second cell wall structures. The alignment layer comprises a liquid crystal film consisting essentially of liquid crystals, and distinguishes the prior art as described above. In view of at least the above arguments for claims 1 and 11 above, it is respectfully submitted that claim 24 also defines allowable subject matter.

In view of the foregoing, it is respectfully submitted that the pending claims define allowable subject matter. A favorable action on the merits is respectfully requested.

Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the telephone listed below.

Docket No. 200047.00005
Serial No. 09/656,742

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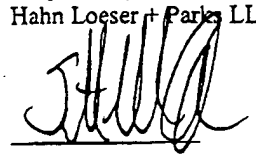
Respectfully submitted,
Hahn Loeser + Parks LLP



Date September 2, 2003

Scott M. Oldham
Reg. No. 32,712
Attorney for Applicant

Hahn Loeser + Parks LLP
1225 West Market Street
Akron, Ohio 44313
(330) 864-5550